Journal of Orthopaedic Translation (2016) 7, 48

Available online at www.sciencedirect.com

ScienceDirect

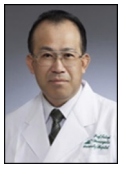
journal homepage: http://ees.elsevier.com/jot

WORKSHOP SUMMARY

Workshop 08
Periprosthetic Joint Immunology: Is the Danger Clear?

Proposed by: Japanese Orthopaedic Association

Workshop Leader



Prof. Michiaki Takagi,
Department of Orthopaedic Surgery, Yamagata University Faculty of Medicine, Yamagata, Japan
E-mails: mtakagi@med.id.yamagata-u.ac.jp, mtakagi@ameria.org

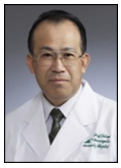
Workshop Summary

Wear and corrosion of artificial joint materials can evoke local host response. Particular wear debris of ultra-high molecular weight polyethylene (UHMWPE), bone cement, metal and ceramic can induce foreign-body granuloma mainly driven by monocyte/macrophages and fibroblasts. Excess particle load of UHMWPE can induce periprosthetic osteolysis, thus leading to so-called "aseptic" loosening of implants. A trend of metal-on-metal articulation of large diameter heads was in vogue, but severe adverse local tissue reaction (ALTR) to metal became evident. Various immune cells and tissue reactions can be found in the ALTR. Aseptic lymphocytic vasculitis-associated lesion (ALVAL), tissue necrosis, fibrosis and wear-driven granuloma can be observed, often combined with bursitis, pseudotumor and even severe soft tissue destruction. Inadequate metal junctions also can induce ALTR. However, the precise mechanisms responsible for the particle load and metallic fear, as well as their cross-talking and/or crossover, are not fully clarified yet.

Periprosthetic joint infection is another important issue for implant longevity, and also causes bone and soft tissue damage around implants. Microbial attack displays polymorphonuclear leukocyte-dominant host reaction. Some potent microbes show acute and severe inflammatory response with local redness and heat, purulent matter, and often with fever. Others behave rather modest but also induce osteolysis, occasionally difficult to distinguish from aseptic loosening by wear/corrosion. Histologic feature of periprosthetic joint infection is also diverse and various immune cells are observed depending on the microbes and host defense. Moreover, rare but possible crossover among particle load, metallic fear (metallophobia) and microbial attack make the borderlines somewhat vague.

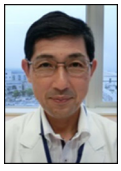
In this symposium, the workshop leader will introduce current knowledge of innate and adaptive immune system and implant-related pathologic conditions. Invited speakers will focus on cutting-edge of particle load, metallic fear and microbial attack, respectively, under the view of basic science and real world of clinics, to probe into the "present and clear" periprosthetic dangers, from bench to bedside.

Speakers



Speaker 1: Introduction—current knowledge of implant-related pathology
Prof. Michiaki Takagi,
Department of Orthopaedic Surgery, Yamagata University Faculty of Medicine, Yamagata, Japan
E-mails: mtakagi@med.id.yamagata-u.ac.jp, mtakagi@ameria.org

Speaker 2: The load of the "particles"—can we defeat osteolysis?
Assis. Prof. Yukihide Minoda,
Department of Orthopaedic Surgery, Osaka City University Graduate School of Medicine, Osaka, Japan
E-mail: yminoda@msic.med.osaka-cu.ac.jp



Speaker 3: Metallophobia—our understanding of ALTR
Prof. Masahiro Hasegawa,
Department of Orthopaedic Surgery, Mie University Graduate School of Medicine, Mie, Japan
E-mail: masahase@clin.medic.mie-u.ac.jp

Speaker 4: Microbial attack—organism identification and the host response
Assoc. Prof. Yutaka Inaba,
Department of Orthopaedic Surgery, Yokohama City University School of Medicine, Yokohama, Japan
E-mail: yute0131@med.yokohama-cu.ac.jp

http://dx.doi.org/10.1016/j.jot.2016.05.008
2214-031X